What is claimed is:

1. A method, comprising:

providing a data sector field on a data storage medium with a physical length sufficient to store a first data block at a first write frequency;

compressing the first data block to provide a compressed data block; and

writing the compressed data block to the data sector field at a second write frequency less than the first write frequency so that the written compressed data block occupies substantially the physical length of said data sector field.

2. The method of claim 1, wherein the first data block comprises user data received from a host device for storage to the data sector field.

3. The method of claim 1, wherein the providing step further comprises providing the data sector field with an automatic gain control (AGC) field to which an oscillating pattern is written at the first write frequency.

4. The method of claim 1, wherein the providing step further comprises providing the data sector field with an automatic gain control (AGC) field, and wherein the AGC field stores an oscillating pattern written at the second write frequency.

5. The method of claim 4, wherein the compressing step further comprises calculating the second write frequency in relation to a resulting size of the compressed data block.

6. The method of claim 1, further comprising:

subsequently reading the data sector field at a readback frequency substantially equal to the second write frequency to obtain a recovered compressed data block; and

uncompressing the recovered compressed data block to provide a recovered data block nominally equal to the first data block.

7. The method of claim 1, wherein the data sector field is characterized as a first data sector field, and wherein the providing step further comprises providing a plurality of additional data sector fields on the data storage medium each nominally identical to the first data sector field.

8. The method of claim 1, wherein the first data block is composed of a selected one of 512, 1024 or 4096 total bytes of user data.

9. The method of claim 8, wherein the first data block is further composed of a plurality of error correction code (ECC) bytes generated in relation to the total bytes of user data so that both the total bytes of user data and the plurality of ECC bytes are compressed to form the compressed data block.

10. The method of claim 1, further comprising a step of calculating a plurality of error correction code (ECC) bytes in relation to the compressed data block, and wherein the writing step further comprises additionally writing the plurality of ECC bytes in uncompressed form to the data sector field.

11. The method of claim 1, wherein the writing step further comprises additionally writing at least a portion of a second compressed data block to the data sector field.

12. The method of claim 1, wherein the writing step further comprises adding an additional number of pad bytes to the compressed data block to obtain a predetermined, total byte count.

13. An apparatus, comprising:

a data storage medium on which a data sector field is formed having a data storage memory space sized to accommodate a selected amount of data written at a first write frequency;

a compression engine which compresses a first data block to provide a compressed data block, the first data block having a size equal to said selected amount of data; and

a communication channel coupled to the compression engine and the data storage medium which writes the compressed data block to the data sector field at a second write frequency less than the first write frequency so that the written compressed data block is provided with a reduced linear bit density as compared to a linear bit density that would be achieved by writing the first data block to the data sector field at the first frequency.

14. The apparatus of claim 13, wherein the first data block comprises user data received from a host device for storage to the data sector field.

15. The apparatus of claim 13, wherein the data sector field further comprises an automatic gain control (AGC) field, and wherein the communication channel further writes an oscillating pattern at the second write frequency to the AGC field when the compressed data block is written.

16. The apparatus of claim 15, further comprising a write frequency calculation unit which calculates the second write frequency in relation to a resulting size of the compressed data block.

17. The apparatus of claim 13, wherein the communication channel subsequently reads the data sector field at a readback frequency substantially equal to the second write frequency to obtain a recovered compressed data block.

18. The apparatus of claim 17, wherein the compression engine subsequently uncompresses the recovered compressed data block to provide a recovered data block nominally equal to the first data block.

19. The apparatus of claim 13, wherein the data storage medium comprises a magnetic recording disc.

20. The apparatus of claim 13, wherein the data sector field is characterized as a first data sector field, and wherein the data storage medium further has a plurality of additional data sector fields on the data storage medium each nominally identical to the first data sector field.

21. The apparatus of claim 13, wherein the first data block is composed a selected one of 512, 1024 or 4096 total bytes of user data.

22. The apparatus of claim 21, wherein the first data block is further composed of a plurality of error correction code (ECC) bytes generated in relation to the total bytes of user data so that both the total bytes of user data and the plurality of ECC bytes are compressed to form the compressed data block.

23. The apparatus of claim 13, further comprising an error correction code (ECC) engine which calculates a plurality of ECC bytes in relation to the compressed data block, and wherein the communication channel additionally writes the plurality of ECC bytes in uncompressed form to the data sector field.

24. The apparatus of claim 13, wherein the communication channel additionally writes at least a portion of a second compressed data block to the data sector field.

25. The apparatus of claim 13, wherein the first data block consists of a first number of bits, wherein the compressed data block consists of a second number of bits, and wherein the second number of bits is equal to at least 0.90 times the first number of bits.

26. The apparatus of claim 13, wherein the communication channel further adds an additional number of pad bytes to the compressed data block to obtain a predetermined, total byte count.

27. An apparatus, comprising:

a data storage medium on which a data sector field is formed having a physical length sufficient to store a first data block at a first write frequency and thereby provide a first linear bit density; and

means for using data compression to store a compressed representation of the first data block to the data sector field at a second linear bit density less than the first linear bit density.